



## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Jon Opsal et al.

Application No.: 10/797,163

Filed: March 10, 2004

For: SYSTEMS AND METHODS FOR  
EVALUATING SEMICONDUCTOR  
LAYERS

Confirmation No.: 5366

Group Art Unit: 2877

Examiner: R.M. Punnoose

**SUPPLEMENTAL INFORMATION  
DISCLOSURE STATEMENT**353 Sacramento Street, Suite 2200  
San Francisco, CA 94111  
(415) 772-4900M/S RCE  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450**CERTIFICATE OF MAILING**I hereby certify that this correspondence is being deposited  
with the United States Postal Service as First Class Mail in an  
envelope, addressed to: Commissioner for Patents, P.O.  
Box 1450, Alexandria, VA 22313-1450 on Sept. 2, 2004.

STALLMAN &amp; POLLOCK LLP

Dated: 09/2/2004

By:

Georgia K. Stith

Sir:

Applicant(s) submit(s) herewith patents, publications or other information [attached hereto and listed on the attached Form PTO-1449 (modified)] of which they are aware, which they believe(s) may be material to the examination of this application and in respect of which there may be a duty to disclose in accordance with 37 CFR § 1.56.

This Information Disclosure Statement:

- (a) ☐ accompanies the new patent application submitted herewith. 37 CFR § 1.97(a).
- (b) ☐ is filed within three months after the filing date of the application or within three months after the date of entry of the national stage of a PCT application as set forth in 37 CFR § 1.491.
- (c) ☒ as far as is known to the undersigned, is filed before the mailing date of a first Office Action on the merits, or before a first office action after filing a Request for Continued Examination under § 1.114.
- (d) ☐ is filed after the first office action and more than three months after the application's filing date or PCT national stage date of entry filing but, as far as is

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Atty Docket No.: TWI-6660

known to the undersigned, prior to the mailing date of either a final rejection or a notice of allowance, whichever occurs first, and is accompanied by either the fee (\$180) set forth in 37 CFR § 1.17(p) or a certification as specified in 37 CFR § 1.97(e), as checked below.

- (e) ☐ is filed after the mailing date of either a final rejection or a notice of allowance, whichever occurred first, and the Issue Fee has not been paid, and is accompanied by the fee (\$130) set forth in 37 CFR § 1.17(i)(1) and a certification as specified in 37 CFR § 1.97(e), as checked below. This document is to be considered as a petition requesting consideration of the information disclosure statement.

[If either of boxes (d) or (e) is checked above, the following "certification" under 37 CFR § 1.97(e) may need to be completed.] The undersigned certifies that:

- (f) ☐ Each item of information contained in the information disclosure statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this information disclosure statement.
- (g) ☐ No item of information contained in this information disclosure statement was cited in a communication mailed from a foreign patent office in a counterpart foreign application or, to the knowledge of the undersigned after making reasonable inquiry, was known to any individual designated in 37 CFR § 1.56(c) more than three months prior to the filing of this information disclosure statement.

A list of the patent(s) or publication(s) is set forth on the attached Form PTO-1449 (Modified).

A copy of the items on PTO-1449 (Modified) is supplied herewith, except as noted below.

Those patent(s) or publication(s) which are marked with an asterisk (\*) in the attached form PTO-1449 (Modified) are not supplied because they are (a) either U.S. Patents and this an application filed after June 30, 2003, or (b) were previously cited by or submitted to the Office in a prior application no. \_\_\_\_\_, filed \_\_\_\_\_, and relied upon in this application for an earlier filing date under 35 U.S.C. § 120.

A concise explanation of relevance of the items listed on form PTO-1449 (Modified) is:

- (h) ☒ not given

- (i) ☐ given for each listed item
- (j) ☐ given for only non-English language listed item(s) [Required]
- (k) ☐ is in the form of an English language copy of a Search Report from a foreign patent office, issued in a counterpart application, which refers to the relevant portions of the references [copy attached].

The Examiner is reminded that a "concise explanation of the relevance" of the submitted items "may be nothing more than identification of the particular figure or paragraph of the patent or publication which has some relation to the claimed invention," MPEP § 609.

While the information and references disclosed in this Information Disclosure Statement may be "material" pursuant to 37 CFR § 1.56, it is not intended to constitute an admission that any patent, publication or other information referred to therein is "prior art" for this invention unless specifically designated as such.


In accordance with 37 CFR § 1.97(g), the filing of this Information Disclosure Statement shall not be construed to mean that a search has been made or that no other material information as defined in 37 CFR § 1.56(a) exists. It is submitted that the Information Disclosure Statement is in compliance with 37 CFR § 1.98 and MPEP § 609 and the Examiner is respectfully requested to consider the listed references.

- ☒ The Commissioner is hereby authorized to charge our Deposit Account No. 50-1703, under Order No. TWI-6660, for any fees required in connection with the filing of this Information Disclosure Statement. **A duplicate copy of this Notice is enclosed for this purpose.** In particular, in the event that an Office Action has crossed in the mail with this Information Disclosure Statement, the Commissioner is authorized to charge the above-named deposit account for any fees required pursuant to CFR §§ 1.17(p) or 1.17(i)(1).

Respectfully submitted,

STALLMAN & POLLOCK LLP

Dated: September 2, 2004

By:   
Michael A. Stallman Reg. No. 29,444

Attorneys for Applicant(s)



**INFORMATION DISCLOSURE CITATION**  
(Use several sheets if necessary)

Docket Number (Optional)

**TWI-6660**

Application Number

**10/797,163**

Applicant(s)

**Jon Opsal et al.**

Filing Date

**March 10, 2004**

Group Art Unit

**2877**

**U.S. PATENT DOCUMENTS**

*EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE

**FOREIGN PATENT DOCUMENTS**

	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
	AA	WO 83/03303	09/29/1983	PCT	G01N	21/63		
	AB	0 432 963 A2	06/19/1991	EPC	G01N	21/17		

**OTHER DOCUMENTS**

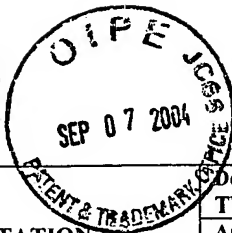
(Including Author, Title, Date, Pertinent Pages, Etc.)

	AC	A. Rosencwaig, "Depth Profiling of Integrated Circuits with Thermal Wave Electron Microscopy," <i>Electronic Letters</i> , 20th Nov. 1980, Vol. 16, No. 24, pp. 928-930.
	AD	J. Opsal et al., "Thermal and plasma wave depth profiling in silicon," <i>Appl. Phys. Lett.</i> , 1 Sept. 1985, Vol. 47, No. 5, pp. 498-500.
	AE	A. Rosencwaig, Chapters 17, 18, and 21 <i>Photoacoustics and Photoacoustic Spectroscopy</i> , 1980, pp. 207-244 (Chapts. 17-18) and 270-284 (Chapt. 21).
	AF	X.D. Wu et al., "Photothermal microscope for high- $T_c$ superconductors and charge density waves," <i>Rev. Sci. Instrum.</i> , Nov. 1993, Vol. 64, No. 11, pp. 3321-3327.
	AG	J.T. Fanton et al., "High-sensitivity laser probe for photothermal measurements," <i>Appl. Phys. Lett.</i> , 13 July 1987, Vol. 51, No. 2, pp. 66-68.
	AH	J.T. Fanton et al., "Low-Temperature Photothermal Measurements of High $T_c$ Superconductors," <i>The Review of Progress in Quantitative Nondestructive Evaluation</i> (Reprint G.L. Report No. 4728 [Aug. 1990]), Presented July 15-20, 1990, 8 pages in length.
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	AJ	J.T. Fanton et al., "Multiparameter measurements of thin films using beam-profile reflectometry," <i>Journal of Applied Physics</i> , 1 June 1993, Vol. 73, No. 11, pp. 7035-7040.
	AK	G. Langer et al., "Thermal conductivity of thin metallic films measured by photothermal profile analysis," <i>Rev. Sci. Instrum.</i> , Vol. 68 (3), March 1997, pp. 1510-1513.
	AL	G. Savignat et al., "Non-destructive characterization of refractories by mirage effect and photothermal microscopy," <i>Journal De Physique IV</i> , Colloque C7, supplement au Journal de Physique III, Vol. 3, Nov. 1993, pp. 1267-1272.
	AM	M.B. Suddendorf et al., "Noncontacting measurement of opaque thin films using a dual beam thermal wave probe," <i>Appl. Phys. Lett.</i> , Vol. 62 (25), 21 June 1993, pp. 3256-3258.
	AN	M. Liu et al., "Response of interferometer based probe systems to photodisplacement in layered media," <i>J. Appl. Phys.</i> , Vol. 76 (1), 1 July 1994, pp. 207-215.
	AO	J.F. Bisson et al., "Influence of diffraction on low thermal diffusivity measurements with infrared photothermal microscopy," <i>J. Appl. Phys.</i> , Vol. 83 (2), 15 January 1998, pp. 1036-1042.
	AP	E.P. Visser et al., "Measurement of thermal diffusion in thin films using a modulated laser technique: Application to chemical-vapor-deposited diamond films," <i>J. Appl. Phys.</i> , Vol. 71 (7), 1 April 1992, pp. 3238-3248.
	AQ	L. Pottier, "Micrometer scale visualization of thermal waves by photorefectance microscopy," <i>Appl. Phys. Lett.</i> , Vol. 64 (13), 28 March 1994, pp. 1618-1619.
	AR	A.M. Mansanares et al., "Photothermal microscopy: Thermal contrast at grain interface in sintered metallic materials," <i>J. Appl. Phys.</i> , Vol. 75 (7), 1 April 1994, pp. 3344-3350.

Examiner

Date Considered

Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.



**INFORMATION DISCLOSURE CITATION**  
(Use several sheets if necessary)

Docket Number (Optional)

TWI-6640

Application Number

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Applicant(s)

Jon Opsal et al.

Filing Date

March 10, 2004

Group Art Unit

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**U.S. PATENT DOCUMENTS**

*EXAMINER INITIAL	REF	DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE

**FOREIGN PATENT DOCUMENTS**

	REF	DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	
							YES	NO

**OTHER DOCUMENTS**

(Including Author, Title, Date, Pertinent Pages, Etc.)

	AS	A.M. Mansanares et al., "Temperature field determination of InGaAsP/InP lasers by photothermal microscopy: Evidence for weak nonradiative processes at the facets," <i>Appl. Phys. Lett.</i> , Vol. 64 (1), 3 January 1994, pp. 4-6.
	AT	Jian-Chun Cheng et al., "Theoretical studies of pulsed photothermal phenomena in semiconductors," <i>J. Appl. Phys.</i> , Vol. 74, No. 9, 1 November 1993, pp. 5718-5725.

Examiner	Date Considered
Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP Section 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	